ADAM-6000 Series

Ethernet Hub/Switch/Fiber Optical

The ADAM-6510/6520/6521 are industrial-grade Ethernet hubs and switches. They allow users to expand their industrial network fast and cost-effectively. The ADAM-6510 is a 10 Mbps hub, which has four twisted pair ports to connect up to four Ethernet devices. The ADAM-6520 is a 5-port 10/100 Mbps switch, which connects to 5 workstations and auto-detects both 10 Mbps and 100 Mbps connections. The ADAM-6521 consists of one fiber optic and four RJ-45 ports. With fiber optics, the transmission distance can be up to 2 km. In addition, noise interference is prevented. Moreover, the above products provide rugged industrial grade design to assure reliability and stability. Thus, the ADAM-6510/6520/6521 are especially suited for industrial environments with Ethernet networking needs: semi-conductor factories, inventory control environments, assembly lines and more.

Flexible Mounting

Due to its versatile and innovative design, the ADAM-6510/6520/6521 can be positioned/mounted in three different ways: DIN rail, panel and piggyback mounting. Suitable for any industrial environment.

Advanced Surge Protection for Power Input

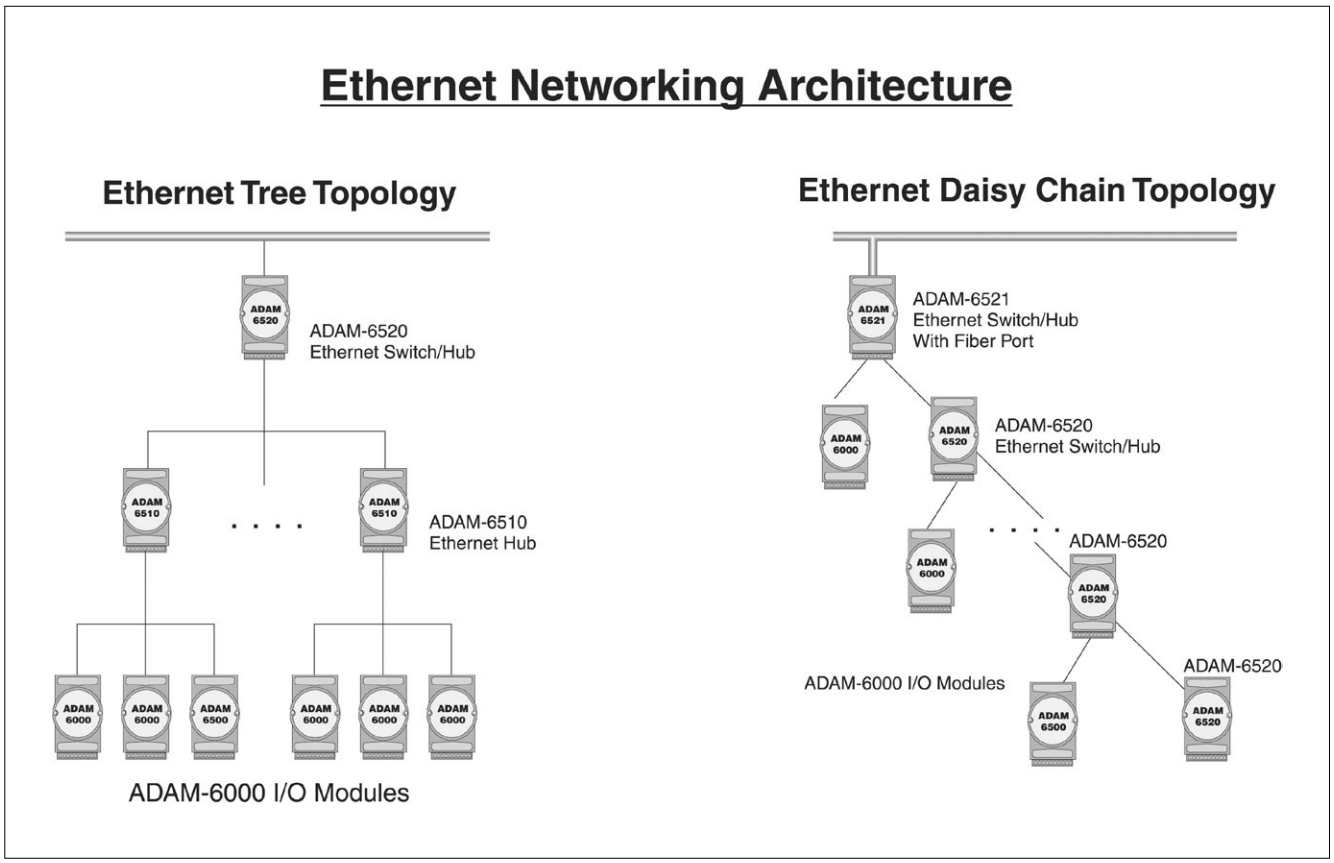
The ADAM-6510/6520/6521 support a wide voltage range of +10 ~ 30 V_{DC} over the terminal block, which helps prevent system disconnection. Besides, it also provides 3000 V_{DC} surge protection to protect itself from being damaged by over-voltage. This makes the system safer and more reliable.

Wide Operating Temperature Range

The operating temperature of the ADAM-6510/6520/6521 varies from -10 ~ 70° C. This advantage permits it to be functional in the harshest operating environments.

Easy to Troubleshoot

The six inclusive LED indicators make troubleshooting of the ADAM-6510/6520/6521 easier. Each port has a pair of LEDs that indicate link status and port activities. This function easily informs users of any collisions, link status, power failure and data receipt for immediate on-site diagnostics.



10/100Base-TX Ethernet to 100Base-FX Multi-Mode (ADAM-6541) and WDM Single Strand (ADAM-6542) Fiber Optics Converter

The ADAM-6541 and 6542 are industrial grade converters which are designed to convert Ethernet network (10/100Base-TX) to a fiber optic network (100Base-FX). They transparently convert Ethernet signals into optic signals. The advantages of fiber optics are wide bandwidth, EMI protection and less interference at long-distance transmissions. Therefore, the ADAM-6541 and 6542 are ideal solutions for "fiber-to-building" applications at central offices or local sites.

High-speed Transmission

The ADAM-6541 and 6542 support MDI/MDI-X of auto detection, so crossover wires are not required. They also include a switch controller that can sense the transmission speed (10/100 Mbps) automatically. Both the Ethernet port and the fiber port have memory buffers that support a store-and-forward mechanism, assuring that data can be transmitted properly.

WDM Single Strand Fiber

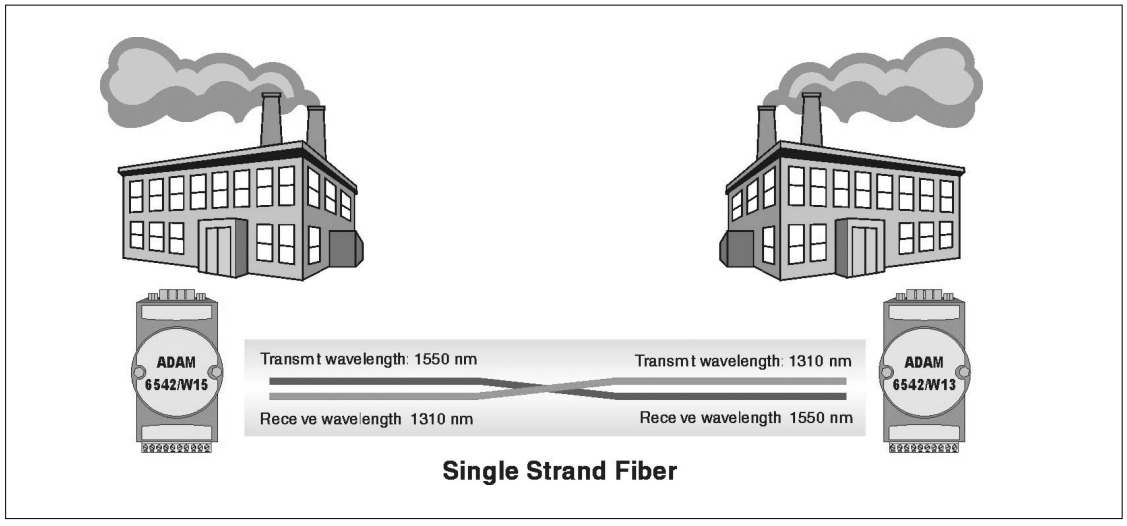
The ADAM-6542 uses WDM technology that increases the information carrying capacity of fiber via multiplex transmission and reception of signals at different wavelengths on a single strand cable. The WDM technology is implemented in couples. One site is installed with ADAM-6542/W15 where the transmission channel is 1550nm and the reception channel is 1310nm. The other site is installed with an ADAM6542/W13 where the transmission channel is 1310nm and the reception channel is 1550nm. Both transmission and reception channels of ADAM-6542/W15 and ADAM-6542/W13 are multiplexed to a single strand cable. So you can cut your cabling costs in half when you use ADAM-6542/W15 and ADAM-6542/W13 instead of a dual fiber converter.

Industrial Grade Design

The ADAM-6541/6542 are extremely compact and they can be mounted via DIN rail, on a panel, or they can be piggy backed on top of each other.

The ADAM-6541 and ADAM-6542 provide three LED indicators: power, LNK/ACT, and 10/100 Mbps, which eases troubleshooting.

The ADAM-6541/6542 can work normally at -10 to 70° C and accept wide unregulated voltage ranges from +10 ~ 30 V_{DC}. Besides, the ADAM-6541/6542 also provide 3,000 V_{DC} surge protection to protect them from being damaged by over-voltage. Suitable for any harsh operating environment.



Single Strand Fiber

ADAM-6000 Series

Software Support

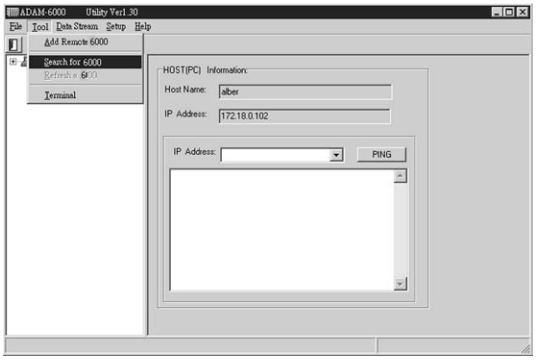
Based on the Modbus/TCP standard, the ADAM-6000 firmware has a built-in Modbus/TCP server. Advantech provides the necessary DLL drivers, OPC Server, and Windows Utility for the ADAM-6000. You can configure this DA&C system via Windows Utility and integrate it with a HMI software package via Modbus/TCP driver or Modbus/TCP OPC Server. Furthermore, you can use the DLL driver to develop your own applications.

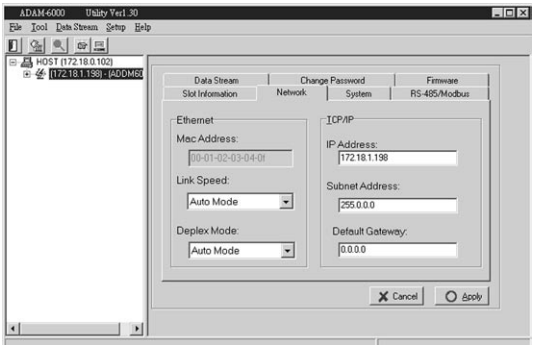
Windows Utility

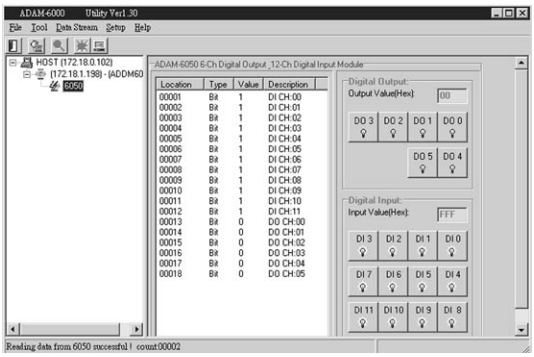
For system configuration, Windows utility offers a friendly operating environment to calibrate I/O modules, monitor current data, set IP addresses etc. As you execute this program, it will automatically search each ADAM-6000 device on the network. There are also some advanced functions, such as the scaling function, which helps users convert various field signals to engineering units, and a latch output function, which forces data or status to create system simulations.

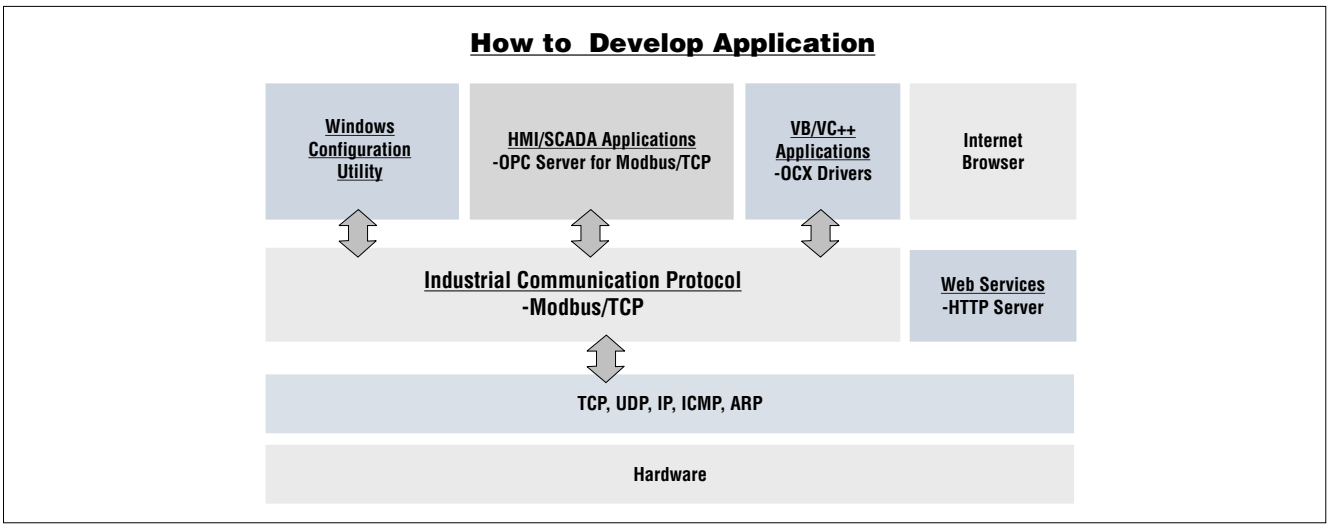
Browser-based on-line Monitoring

Each ADAM-6000 module features an embedded HTTP server for remote monitoring and diagnostics. The ADAM-6000 also pre-builds a default html page in each module for online support for monitoring analog input/output, digital input/output, alarm/event, counter, or real-time values, all done remotely via the Intranet/Internet. Just enter the IP address of the ADAM-6000 module in any standard browser, and you can get dynamic, real-time values of ADAM-6000 I/O modules immediately, without any required programming.









Modbus/TCP OPC Server

OPC is a common data exchange tool worldwide. Almost all hardware and software venders support this standard. Modbus/TCP OPC servers are designed for connecting Modbus devices via the Ethernet. It acquires data from the ADAM-5000/TCP, then links with the OPC client from HMI. In this way, HMI software packages can be used and easily integrated with ADAM Ethernet solutions.

ActiveX Controls

Advantech offers an easy-to-use integration tool, Modbus/TCP ActiveX Controls for ADAM-6000 I/O data access. This can be used for users to develop applications with VB, VC, and other Windows development kits. (Note: The UDP function isn't fully supported in the existing version.)

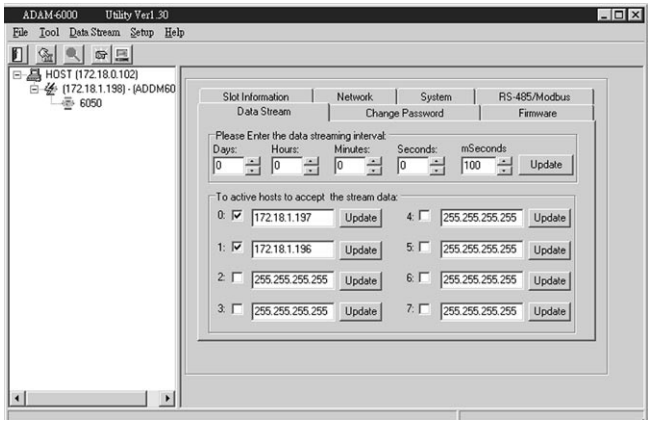
DLL Driver

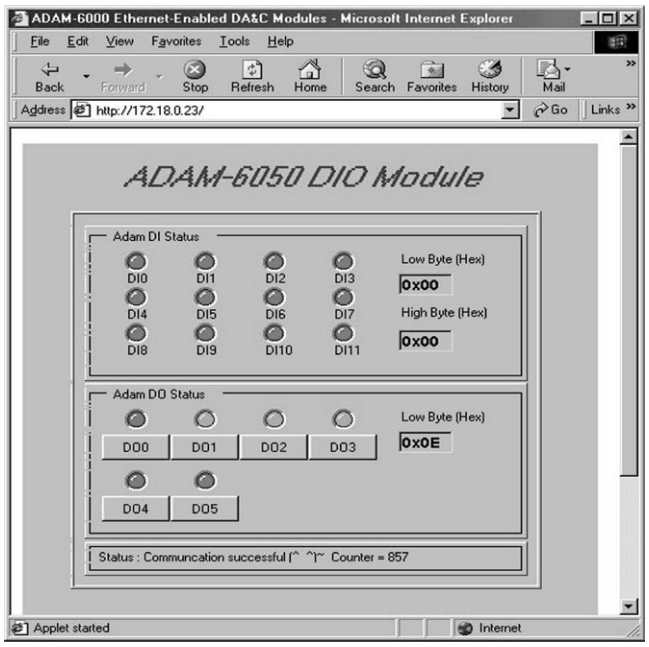
Advantech also offers another easy-to-use integration tool, the ADAM-5000/TCP DLL driver, for users to develop their own applications with VB, VC, BCB, Delphi, and other Windows development kits.

Customizeable Web Page

Since the ADAM-6000 modules have a built-in web server with a default web page, users can monitor and control the I/O status everywhere, through any web browser that supports Java applets. The ADAM-6000 modules data can also be downloaded to a user-defined web page for custom applications. Advantech has provided sample JAVA applets to use as a reference if you want to design your own operator interfaces. These interfaces can be downloaded into ADAM-6000 modules via Windows Utility.

To create an applet web page for ADAM-6000 modules is quick and easy. The following steps show a simple method to configure your own web page in short time.




ADAM-6000 Ethernet-Enabled DA&C Modules - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail
Address http://172.18.0.23/
Go Links
ADAM-6050 DIO Module
Adam DI Status
DI0 DI1 DI2 DI3 DI4 DI5 DI6 DI7 DI8 DI9 DI10 DI11
Low Byte (Hex)
0x00
High Byte (Hex)
0x00
Adam DO Status
DO0 DO1 DO2 DO3 DO4 DO5
Low Byte (Hex)
0x0E
Status : Communcation successful Counter = 857
Applet started
Internet

How to Configure Your Own Web Page

Step1 Free Download J2EE Development Kit via Internet

Step2 Write JAVA Applet Program

Step3 Pack as JAR File

Step4 Download to ADAM-6000 Module through Windows Utility

ADAM-6000 Series

Specifications \ Model Name		ADAM-6015	ADAM-6017	ADAM-6018	ADAM-6022	ADAM-6024	ADAM-6050	ADAM-6051	ADAM-6052	ADAM-6060
Interface*		10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet	10/100 Mbps Ethernet
Resolution		16 bit	16 bit	16 bit	16 bit for AI 12 bit for AO	16 bit for AI 12 bit for AO	-	-	-	-
Analog	**Input**	Input channels	7 differential	8 differential	6 differential	6 diff. AI	6 diff. AI	-	-	-
	Sampling Rate	10 samples/ sec	10 samples/ sec	10 samples/ sec	10 samples/ sec	10 samples/ sec	-	-	-	-
	Input Type	PT-50 PT-100 PT-200 PT-1000 Balco 500 NI 50	±150 mV ±500 mV 0 ~ 5 V ±10 V	±15 mV ±50 mV ±100 mV ±500 mV ±1 V	±2.5 V	0 ~ 10 V_{DC}	0 ~ 10 V_{DC}	-	-	-
	Current Input		0 ~ 20 mA 4 ~ 20 mA	0 ~ 20 mA 4 ~ 20 mA	0 ~ 20 mA 4 ~ 20 mA	0 ~ 20 mA 4 ~ 20 mA	-	-	-	-
	Direct Sensor Input	Pt, Balco and Ni RTD	-	J.K.T.E.R.S.B. Thermocouple	-	-	-	-	-	-
	Burn-out Detection	Yes	-	Yes	-	-	-	-	-	-
	Channel Independant Configuration	Yes	Yes	Yes	Yes	Yes	-	-	-	-
	Math. Functions	Max. Min. Avg.	Max. Min. Avg.	Max. Min. Avg.	-	-	-	-	-	-
Analog Output	**Output Channels**	-	-	-	2 AO	2 AO	-	-	-	-
	Voltage Output	-	-	-	4 ~ 20 mA with 15 V_{DC}	4 ~ 20 mA with 15 V_{DC}	-	-	-	-
	Drive Current	- -	-	-	0 ~ 10 V_{DC} with 30 mA	0 ~ 10 V_{DC} with 30 mA	-	-	-	-
Digital Input and Output	**Digital Input channels**	-	-	-	2 (Sink)	2 (Sink)	12 (Sink)	12 (Sink)	8 (Source)	6 (Sink)
	Digital Output Channels	-	2 (Sink)	8 (Sink)	2 (Sink)	2 (Sink)	6 (Sink)	2 (Sink)	8 (Source)	6-channel relay (No)
	Event Counter	-	-	-	-	-	-	2 (5 KHz)	-	-
	High/Low Alarm Settings	Yes	Yes	Yes	-	-	-	-	-	-
Isolation		2000 V_{RMS}	2000 V_{RMS}	2000 V_{RMS}	2000 V_{RMS}	2000 V_{RMS}	2000 V_{RMS}	2000 V_{RMS}	2000 V_{RMS}	2000 V_{RMS}
Watchdog Timer		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Remark		-	-	-	Built-in Dual Loop PID Control Algorithm	-	-	-	-	-

Model Name / Specifications	ADAM-6500	ADAM-6501	ADAM-6510	ADAM-6520	ADAM-6521
Interface	10Base-T	10/100Base-T	10Base-T	10/100Base-T	10/100Base-T, 100Base-FX
Ethernet Port	1	1	4	5	5
Serial Port	5	3	-	-	-
Speed	10 Mbps	10/100 Mbps	10 Mbps	10/100 Mbps	10/100 Mbps
Surge Protection	1500 V_{RMS}	1500 V_{RMS}	3000 V_{ESD}	3000 V_{ESD}	3000 V_{ESD}
Parity	Even, odd, none, space, mark	Even, odd, none, space, mark			
Data bit	5, 6, 7, 8	5, 6, 7, 8			
Stop bit	1, 1.5, 2	1, 1.5, 2			
S/W	Configuration/ port mapping utlity	Configuration/ port mapping utlity			
Connector	Network: RJ-45 Serial: Sub-D9 & Screwed Terminator	Network: RJ-45 Serial: Sub-D9 & Screwed Terminator	Network: RJ-45	Network: RJ-45 Serial: terminal block	Network: RJ-45 Fiber: SC type
Mounting	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback	DIN-Rail, Wall, Piggyback
Power Requirement	10 - 30 V	10 - 30 V	10 - 30 V	10 - 30 V	10 - 30 V
Power Consumption	4 W	4 W	1 W	2.4 W	3.6 W
Operating Temperature	0 ~ 65° C	0 ~ 65° C	-10 ~ 70° C	-10 ~ 70° C	-10 ~ 65° C